TNReady Integrated Math III Blueprint

Clusters on Part I	# of Items	% of Part I	Additional Clusters on Part II (All Part I Clusters will also be assessed on Part II)	# of Items	% of Part II	% of Test
Structure and Operations with Expressions • Reason quantitatively and use units to solve problems • Interpret the structure of expressions • Write expressions in equivalent forms • Understand the relationship between zeros and factors of polynomials • Use polynomial identities to solve problems • Rewrite rational expressions	3–5	14–24%	No additional clusters	3–6	8–17%	14–17%
Creating and Reasoning with Equations and Inequalities • Create equations that describe numbers or relationships • Understand solving equations as a process of reasoning and explain the reasoning • Represent and solve equations and inequalities graphically	3–5	14–24%	No additional clusters	3–5	11–14%	12–16%
Interpreting and Building Functions • Interpret functions that arise in applications in terms of the context • Analyze functions using different representations • Build new functions from existing functions	4–5	19–24%	No additional clusters	4–6	13–15%	16–18%
Linear, Quadratic, Exponential and Trigonometric Functions • Construct and compare linear, quadratic, and exponential models and solve problems	1–2	5–10%	Linear, Quadratic, Exponential and Trigonometric Functions • Extend the domain of trigonometric functions using the unit circle • Model periodic phenomena with trigonometric functions • Prove and apply trigonometric identities	5–7	14–19%	10–14%

Geometry: Congruence and Constructions • Make geometric constructions • Understand and apply theorems about circles • Find arc lengths and areas of sectors of circles	3–4	14–19%	No additional clusters	2–4	6–11%	11–14%
Geometry: Properties, Dimension and Modeling • Translate between the geometric description and the equation for a conic section • Use coordinates to prove simple geometric theorems algebraically • Apply geometric concepts in modeling situations	2–5	10–23%	Geometry: Properties, Dimension and Modeling • Visualize relationships between two-dimensional and three-dimensional objects	2–4	6–11%	11–16%
No content from these clusters will be assessed on Part I	0	0%	Interpreting Data, Making Inferences and Justifying Conclusions • Summarize, represent, and interpret data on a single count or measurement variable • Summarize, represent, and interpret data on two categorical and quantitative variables • Understand and evaluate random processes underlying statistical experiments • Make inferences and justify conclusions from sample surveys, experiment, and observational studies	9–11	25–31%	16–19%
Total	20–22	100%	Total	35–38	100%	100%

Reading the Revisions: The totals on the blueprints released in Spring 2015 were estimated totals of the test forms. The revised blueprints reflect actual totals for the test forms. The Form Summaries line provides the range of actual form totals. There are multiple forms per grade.

Part I – Calculator Allowed

Cluster	Standards		# of Items
Structure and Operation with Expressions	N-Q.A – Reason quantitatively and use units to solve problems	Define appropriate quantities for the purpose of descriptive modeling.	3–5
	A-SSE.A – Interpret the structure of expressions	Use the structure of an expression to identify ways to rewrite it.	
	A-SSE.B –Write expressions in equivalent forms to solve problems	Derive the formula for the sum of a finite geometric series (when the common ratio is not 1), and use the formula to solve problems.	
	A-APR.B – Understand the relationship between zeros and factors of polynomials	Know and apply the Remainder Theorem: For a polynomial $p(x)$ and a number a, the remainder on division by $x – a$ is $p(a)$, so $p(a) = 0$ if and only if $(x – a)$ is a factor of $p(x)$.	
		Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.	
	A-APR.C – Use polynomial identities to solve problems	Prove polynomial identities and use them to describe numerical relationships.	
	A-APR.D – Rewrite rational expressions	Rewrite simple rational expressions in different forms; write $a(x)/b(x)$ in the form $q(x) + r(x)/b(x)$, where $a(x)$, $b(x)$, $q(x)$, and $r(x)$ are polynomials with the degree of $r(x)$ less than the degree of $b(x)$, using inspection, long division, or, for the more complicated examples, a computer algebra system.	
Creating and Reasoning with Equations and Inequalities	A-CED.A – Create equations that describe numbers or relationships	Create equations and inequalities in one variable and use them to solve problems.	3–5
		Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	
	A-REI.A – Understand solving equations as a process of reasoning and explain the reasoning	Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.	
		Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.	
	A-REI.D – Represent and solve equations and inequalities graphically	Explain why the x-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.	

Cluster	Standards		# of Items
Interpreting and Building Functions	F-IF.B – Interpret functions that arise in applications in terms of the context	For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship.	4–5
		Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.	
	F-IF.C – Analyze functions using different representations	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. c. Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior. e. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.	
		Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).	
	F-BF.B – Build new functions from existing functions	Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k\,f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology.	
		Find inverse functions. a. Solve an equation of the form $f(x) = c$ for a simple function f that has an inverse and write an expression for the inverse.	
Linear, Quadratic, Exponential, and Trigonometric Functions	F-LE.A – Construct and compare linear, quadratic, and exponential models and solve problems	For exponential models, express as a logarithm the solution to $ab^{ct} = d$ where a, c, and d are numbers and the base b is 2, 10, or e; evaluate the logarithm using technology.	1–2
Geometry: Congruence and Constructions	G-CO.D – Make geometric constructions	Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.).	3–4
		Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.	
	G-C.A – Understand and apply theorems about circles	Prove that all circles are similar.	
		Identify and describe relationships among inscribed angles, radii, and chords.	
		Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.	
	G-C.B – Find arc lengths and areas of sectors of circles	Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.	

Cluster	Standards		# of Items
Geometry: Properties, Dimension, and Modeling	G-GPE.A – Translate between the geometric description and the equation for a conic section	Derive the equation of a circle of given center and radius using the Pythagorean theorem; complete the square to find the center and radius of a circle given by an equation.	2–5
		Derive the equation of a parabola given a focus and directrix.	
	G-GPE.B – Use coordinates to prove simple geometric theorems algebraically	Use coordinates to prove simple geometric theorems algebraically.	
		Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).	
		Find the point on a directed line segment between two given points that partitions the segment in a given ratio.	
		Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.	
	G-MG.A – Apply geometric concepts in modeling situations	Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).	
		Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).	
		Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).	

Part II – Calculator and Non-Calculator Portions

Cluster	Standards		# of Items
Structure and Operation with Expressions	N-Q.A – Reason quantitatively and use units to solve problems.	Define appropriate quantities for the purpose of descriptive modeling.	3–6
	A-SSE.A – Interpret the structure of expressions	Use the structure of an expression to identify ways to rewrite it.	
	A-SSE.B –Write expressions in equivalent forms to solve problems	Derive the formula for the sum of a finite geometric series (when the common ratio is not 1), and use the formula to solve problems.	
	A-APR.B – Understand the relationship between zeros and factors of polynomials	Know and apply the Remainder Theorem: For a polynomial $p(x)$ and a number a, the remainder on division by $x – a$ is $p(a)$, so $p(a) = 0$ if and only if $(x – a)$ is a factor of $p(x)$.	
		Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.	
	A-APR.C – Use polynomial identities to solve problems	Prove polynomial identities and use them to describe numerical relationships.	
	A-APR.D – Rewrite rational expressions	Rewrite simple rational expressions in different forms; write $a(x)/b(x)$ in the form $q(x) + r(x)/b(x)$, where $a(x)$, $b(x)$, $q(x)$, and $r(x)$ are polynomials with the degree of $r(x)$ less than the degree of $b(x)$, using inspection, long division, or, for the more complicated examples, a computer algebra system.	
Creating and Reasoning with Equations and Inequalities	A-CED.A – Create equations that describe numbers or relationships	Create equations and inequalities in one variable and use them to solve problems.	3–5
		Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	
	A-REI.A – Understand solving equations as a process of reasoning and explain the reasoning	Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.	
		Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.	
	A-REI.D – Represent and solve equations and inequalities graphically	Explain why the x-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.	

Cluster	Standards		# of Items
Interpreting and Building Functions	F-IF.B – Interpret functions that arise in applications in terms of the context	For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship.	4–6
		Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.	
	F-IF.C – Analyze functions using different representations	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. c. Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior. e. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.	
		Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).	
	F-BF.B – Build new functions from existing functions	Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k\,f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology.	
		Find inverse functions. a. Solve an equation of the form $f(x) = c$ for a simple function f that has an inverse and write an expression for the inverse.	
Linear, Quadratic, Exponential, and Trigonometric Functions	F-LE.A – Construct and compare linear, quadratic, and exponential model sand solve problems	For exponential models, express as a logarithm the solution to $ab^{ct} = d$ where a, c, and d are numbers and the base b is 2, 10, or e; evaluate the logarithm using technology.	5–7
	F-TF.A – Extend the domain of trigonometric functions using the unit circle	Understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle.	
		Explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers, interpreted as radian measures of angles traversed counterclockwise around the unit circle.	
	F-TF.B – Model periodic phenomena with trigonometric functions	Choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline.	
	F-TF-C – Prove and apply trigonometric identities	Prove the Pythagorean identity $\sin^2(\theta) + \cos^2(\theta) = 1$ and use it to find $\sin(\theta)$, $\cos(\theta)$, or $\tan(\theta)$ given $\sin(\theta)$, $\cos(\theta)$, or $\tan(\theta)$ and the quadrant of the angle.	

Cluster	Standards		# of Items
Geometry: Congruence and Constructions	G-CO.D – Make geometric constructions	Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.).	2–4
		Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.	
	G-C.A – Understand and apply theorems about circles	Prove that all circles are similar.	
		Identify and describe relationships among inscribed angles, radii, and chords.	
		Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.	
	G-C.B – Find arc lengths and areas of sectors of circles	Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.	
Geometry: Properties, Dimension, and Modeling	G-GPE.A – Translate between the geometric description and the equation for a conic section	Derive the equation of a circle of given center and radius using the Pythagorean theorem; complete the square to find the center and radius of a circle given by an equation.	2–4
		Derive the equation of a parabola given a focus and directrix.	
	G-GPE.B – Use coordinates to prove simple geometric theorems algebraically	Use coordinates to prove simple geometric theorems algebraically.	
		Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).	
		Find the point on a directed line segment between two given points that partitions the segment in a given ratio.	
		Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.	
	G-MG.A – Apply geometric concepts in modeling situations	Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).	
		Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).	
		Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).	
	G-GMD – Visualize relationships between two-dimensional and three-dimensional objects	Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.	

Cluster	Standards		# of Items
Interpreting Data, Making Inferences and Justifying Conclusions	S-ID.A – Summarize, represent, and interpret data on a single count or measurement variable	Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.	9–11
	S-ID.B – Summarize, represent, and interpret data on two categorical and quantitative variables	Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. a. Fit a function to the data; use functions fitted to data to solve problems in the context of the data. b. Informally assess the fit of a function by plotting and analyzing residuals.	
	S-IC.A – Understand and evaluate random processes underlying statistical experiments	Understand statistics as a process for making inferences about population parameters based on a random sample from that population.	
		Decide if a specified model is consistent with results from a given data-generating process, e.g., using simulation.	
	S-IC.B – Make inferences and justify conclusions from sample surveys and observational studies	Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each.	
		Use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling.	
		Use data from a randomized experiment to compare two treatments; use simulations to decide if differences between parameters are significant.	
		Evaluate reports based on data.	

Overall Blueprint (Includes Part I and Part II)

Cluster	Standards		# of Items
Structure and Operation with Expressions	N-Q.A – Reason quantitatively and use units to solve problems	Define appropriate quantities for the purpose of descriptive modeling.	8–10
	A-SSE.A – Interpret the structure of expressions	Use the structure of an expression to identify ways to rewrite it.	
	A-SSE.B –Write expressions in equivalent forms to solve problems	Derive the formula for the sum of a finite geometric series (when the common ratio is not 1), and use the formula to solve problems.	
	A-APR.B – Understand the relationship between zeros and factors of polynomials	Know and apply the Remainder Theorem: For a polynomial $p(x)$ and a number a, the remainder on division by $x - a$ is $p(a)$, so $p(a) = 0$ if and only if $(x - a)$ is a factor of $p(x)$.	
		Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.	
	A-APR.C – Use polynomial identities to solve problems	Prove polynomial identities and use them to describe numerical relationships.	
	A-APR.D – Rewrite rational expressions	Rewrite simple rational expressions in different forms; write $a(x)/b(x)$ in the form $q(x) + r(x)/b(x)$, where $a(x)$, $b(x)$, $q(x)$, and $r(x)$ are polynomials with the degree of $r(x)$ less than the degree of $b(x)$, using inspection, long division, or, for the more complicated examples, a computer algebra system.	
Creating and Reasoning with Equations and Inequalities	A-CED.A – Create equations that describe numbers or relationships	Create equations and inequalities in one variable and use them to solve problems.	7–9
		Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	
	A-REI.A – Understand solving equations as a process of reasoning and explain the reasoning	Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.	
		Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.	
	A-REI.D – Represent and solve equations and inequalities graphically	Explain why the x-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.	

Cluster	Standards		# of Items
Interpreting and Building Functions	F-IF.B – Interpret functions that arise in applications in terms of the context	For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship.	9–10
		Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.	
	F-IF.C – Analyze functions using different representations	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. c. Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior. e. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.	
		Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).	
	F-BF.B – Build new functions from existing functions	Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k\,f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology.	
		Find inverse functions. a. Solve an equation of the form $f(x) = c$ for a simple function f that has an inverse and write an expression for the inverse.	
Linear, Quadratic, Exponential, and Trigonometric Functions	F-LE.A – Construct and compare linear, quadratic, and exponential models and solve problems	For exponential models, express as a logarithm the solution to $ab^{ct} = d$ where a, c, and d are numbers and the base b is 2, 10, or e; evaluate the logarithm using technology.	6–8
	F-TF.A – Extend the domain of trigonometric functions using the unit circle	Understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle.	
		Explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers, interpreted as radian measures of angles traversed counterclockwise around the unit circle.	
	F-TF.B – Model periodic phenomena with trigonometric functions	Choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline.	
	F-TF-C – Prove and apply trigonometric identities	Prove the Pythagorean identity $\sin^2(\theta) + \cos^2(\theta) = 1$ and use it to find $\sin(\theta)$, $\cos(\theta)$, or $\tan(\theta)$ given $\sin(\theta)$, $\cos(\theta)$, or $\tan(\theta)$ and the quadrant of the angle.	

Cluster	Standards		# of Items
Geometry: Congruence and Constructions	G-CO.D – Make geometric constructions	Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.).	6–8
		Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.	
	G-C.A – Understand and apply theorems about circles	Prove that all circles are similar.	
		Identify and describe relationships among inscribed angles, radii, and chords.	
		Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.	
	G-C.B – Find arc lengths and areas of sectors of circles	Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.	
Geometry: Properties, Dimension, and Modeling	G-GPE.A – Translate between the geometric description and the equation for a conic section	Derive the equation of a circle of given center and radius using the Pythagorean theorem; complete the square to find the center and radius of a circle given by an equation.	6–9
		Derive the equation of a parabola given a focus and directrix.	
	G-GPE.B – Use coordinates to prove simple geometric theorems algebraically	Use coordinates to prove simple geometric theorems algebraically.	
		Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).	
		Find the point on a directed line segment between two given points that partitions the segment in a given ratio.	
		Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.	
	G-MG.A – Apply geometric concepts in modeling situations	Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).	
		Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).	
		Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).	
	G-GMD – Visualize relationships between two-dimensional and three-dimensional objects	Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.	

Cluster	Standards		# of Items
Interpreting Data, Making Inferences and Justifying Conclusions	S-ID.A – Summarize, represent, and interpret data on a single count or measurement variable	Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.	9–11
	S-ID.B – Summarize, represent, and interpret data on two categorical and quantitative variables	Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. a. Fit a function to the data; use functions fitted to data to solve problems in the context of the data. b. Informally assess the fit of a function by plotting and analyzing residuals.	
	S-IC.A – Understand and evaluate random processes underlying statistical experiments	Understand statistics as a process for making inferences about population parameters based on a random sample from that population.	
		Decide if a specified model is consistent with results from a given data-generating process, e.g., using simulation.	
	S-IC.B – Make inferences and justify conclusions from sample surveys, and observational studies	Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each.	
		Use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling.	
		Use data from a randomized experiment to compare two treatments; use simulations to decide if differences between parameters are significant.	
		Evaluate reports based on data.	